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The Dzierzon Theory.

BY THE BARON OF BERLEPSCH.

No. VIII.

Having in the preceding articles discussed consecutively the chief points relative to the sexuality of the bees, I shall proceed to consider some interesting theoretical topics, which have likewise a direct practical bearing.

I commence with an inquiry respecting *the fertility of the queen.*

That this quality differs in different queens, and differs in the same queen according to circumstances and seasons, can hardly have escaped the notice of any observant beekeeper. We may, therefore, restrict our inquiry to three points:

FIRST, what is the climax of fertility to which a queen may attain—that is, *how many eggs can she possibly lay in a given time*, as for instance in a day? SECOND, *what conditions her fertility?* THIRD, *what causes it to diminish?* And FOURTH, *what causes it to cease?*

1. As to the utmost attainable extent of oviposition, it is sufficient to tilt up a common hive at different seasons, to become satisfied that the fertility of the queen reaches its acme of development in the months of May and June, when the weather is warm and moist and pasturage abundant; and that at this period the number of eggs laid daily must be very great. But the question is, how many eggs *can* she lay in a day? Dzierzon says about three thousand. Others think it scarcely reaches so many hundred; and Gundelach, in his "*Natural History of the Honey Bee*," taking one of his experiments as the criterion, assumes six hundred as the greatest number she can lay in that space of time. But, for reasons which I shall state hereafter, I never regarded Gundelach's experiment as satisfactory; and this induced me to make three myself in 1844 and 1845, in the hope of being able to throw some light on this controverted subject. In all of these, my efforts were fruitless, because, in each instance, the weather suddenly changed, and rendered my measures abortive. In 1846, I renewed the experiment with happier results. My process was as follows:

On the 7th of May, a powerful swarm issued from one of my largest and most populous colonies. I placed it in a hive fully furnished with empty combs, and at 10 o'clock precisely set it on the stand of the strongest colony in my apiary, which was removed to make room for it. I had weighed the hive and its contents before introducing the swarm, and in the evening found that the swarm weighed 15 lbs. 1 oz. Though the population was immensely increased by bees from the removed colony, I assume only 10 lbs. as the net weight of the bees, because the stores gathered by them that day certainly weighed 5 lbs. On the 8th, they carried in 9 lbs. 6 oz.; and on the 9th, 11 lbs. 2 oz.—the hive being completely covered with bees. The weather and the pasturage could not have been more propitious. The air was warm, moist and perfectly calm, and a large rape field within 200 yards of the apiary was in full bloom—a yellow sea of flowers. The weather continued so till the 10th, inclusive, and at 10 o'clock on the forenoon of that day, I took out all the combs, brushed off the bees, and transferred the former to an empty hive. I then carried them to my chamber, and began to count the eggs as Gundelach did, marking each row of cells, when counted, by inserting a needle. It was an arduous task, and lasted fully six hours; for I could not place the combs on a table, but

had to keep them suspended vertically, to prevent the honey from flowing out of the cells. Whenever a comb was examined and the eggs counted, the number ascertained was at once noted down, having previously tallied the hundreds to guard against error. It was near four o'clock in the afternoon when the enumeration was ended, and the aggregate was found to be 4813 eggs and larvæ, for a few of the eggs were already hatched. Consequently the queen must have laid, on the average, 1604 eggs per day. Gundelach assures us that, in his experiment, not an egg escaped notice. I cannot assert this in my case. There may have been from fifty to a hundred more than I counted, but certainly there was not one less. Until lately, I regarded this as the ultimatum to which egg-laying could be carried by a queen; and for the following reasons:

a. The queen of this colony was reared in 1845, and distinguished herself in that year already by her great fertility. The colony passed the winter in excellent condition, and in April, 1846, was one of the choicest in my apiary.

b. A swarm weighing ten pounds is unquestionably a large one.

c. The time at which the experiment was made, could not have been more favorable. The state of the weather, the abundance and the nearness of the pasturage were all that could, in that respect, be desired.

d. The three unsuccessful experiments made in 1844 and 1845, furnished, apparently, very different results. One swarm, weighing 4½ lbs, had 1408 eggs after a lapse of 72 hours, another weighing 3⅞ lbs., 1398, and another 4¼ lbs., only 1219. But in each of these cases the weather had suddenly changed.

Now, when all this is duly considered, it might be supposed that Dzierzon is in error in assuming that a queen can lay 3000 eggs in a day. And yet I believe that he is right, and regard my experiment of May, 1846, (and of course the previous ones also) as entirely misconceived. But wherein was the mistake? Clearly in this—that I used for the experiment a queen issuing with a *natural* swarm, instead of one accompanying a *forced* swarm. I am now satisfied by the most decisive evidence, that under certain circumstances, the most fertile queen will, even when weather and pasturage are most propitious, lay very few eggs in a day. I have examined the interior of hives at the height of the honey season, when the bees were carrying in most abundantly, and found honey stored in the upper portions of the combs, then followed brood in every stage of development down to the bottom board, with scarcely a cell left empty. Marking a certain space occupied by brood nearly mature, I observed that when the young bees emerged, the cells were, for the most part, filled with honey on the following day, leaving few comparatively—hardly fifty in all—at the disposal of the queen, to be re-supplied with eggs by her. Thus, while the weather was favorable and pasturage most ample, the queen laid few eggs per day, obviously *from the want of empty cells.* I frequently shook forced swarms on the ground, in order to let the bees enter the hives intended for them; and noticed in almost every instance that the queens, though their wings were perfect, were not in a condition to fly. I tried repeatedly to induce them to take wing, by placing them on my hand or casting them in the air. They would either crawl about slowly and clumsily, or drop almost perpendicularly to the ground. Now, it is a well-known fact, that the old queens which accompany first swarms fly with great readiness and ease, if their wings are perfect—because, for some time prior to the issuing of the swarms, they were constrained to repress the development of egg-germs, by the want of empty cells in which to oviposit. They are, consequently, more slender and lighter than the queens of forced swarms usually are in whose hives empty cells were plenty, and there was no necessity for repressing the production of eggs. A queen, taken as it were by surprise, while laying with all the vigor of her natural ability, and suddenly transferred to a hive furnished with plenty of empty comb, will continue to lay in her accustomed manner: whereas, one issuing with a first swarm, requires time to recover her powers, and will probably not recommence laying with her pristine vigor till after the lapse of from 36 to 40 hours. It can generally be told at a glance, whether a fertile queen can fly or not. For such experiments, therefore, forced swarms should be taken from colonies in which egg-laying was prosecuted with full vigor; or if natural swarms be used, the eggs and larvæ should be counted, not on the third day after hiving, but on the tenth or twelfth. Had I done so in 1846, I should probably have obtained a different result, and one more closely approximating the estimate of Dzierzon. I attempted, in 1851, to repeat this experiment with a queen properly qualified, but was once more thwarted by an entire change of weather within ten hours after I commenced operations. I intended to make another trial this summer, but other engagements prevented me from undertaking it. But I will state the result of one investigation. On the 28th of June, the immense amount of brood in one of my hives attracted my attention, and I undertook,

with the aid of Günther, to take an accurate *census* of it. The hive was 18 inches high, 15 inches broad and 11 inches deep, and was occupied by two forced swarms united and introduced on the 10th of June. It was nearly full of comb, and the weather during the month had been peculiarly favorable to brooding. We took out comb after comb, brushed off the bees and counted as we did in 1846, though with more ease, as we were not incommoded by honey—of which the combs contained very little. There were 38,619 cells occupied by brood, and if we assume 21 days as the average time required for the maturing of a worker, the queen must have laid 1839 eggs per day, on the average. When we consider, however, that the bees had, since they were hived, built nearly all the combs (the frames having simply been provided with guide pieces), and that, consequently, the queen had at the outset hardly cells enough at command, I cannot longer entertain a doubt that many a queen, in peculiarly favorable circumstances, does sometimes lay 3000 eggs and upwards per day. Tho' Dzierzon found in one of his mammoth colonies, 60,000 cells filled with brood, so prolonged a continuance of profuse oviposition must still be regarded as a rare occurrence. And if I were asked how many eggs a queen lays per day on the average, *during the period* including the months of May, June and July, I should probably not be willing to name a higher number than six hundred. For there is a wide difference between what a queen *can do, occasionally* and *under favorable contingencies*, and what she *usually and regularly does.*

But what shall I say of Gundelach's experiment? To ascertain the greatest possible extent of egg-laying, he places a feeble colony in a hive containing only a few combs, gives us no account of the state of the weather or pasturage at the time, and yet expects us to receive the results he obtained, as settling the question! I can only exclaim with Horace,

"Indignus, quandoque bonus dormitat Homerus."

2. By what is the fertility of the queen conditioned?

a. By the personal vigor and health of the queen herself. This requires no special proof; for, that there is often a great difference in this respect between queens of the same age, and while all other circumstances are alike, cannot have escaped the notice of any experienced apiarian. We frequently find two colonies equally populous in April, and in May the one shows no marks of improvement, whilst the other is ready to send off a swarm.

b. By pasturage, weather and season. In the northern sections of the temperate zone, where in May and June the face of nature displays "one boundless blush," and her form seems veiled in an "empurpled shower of mingled blossoms," the fertility of the queen reaches its highest development, and the hives are almost literally crammed with brood. But that pasturage and weather do not alone produce this result, but that the *season* likewise contributes its influence, is evident from the fact that in July, however favorable the weather and abundant the pasturage, sometimes even excelling the conditions of June, there is almost always a smaller amount of brood produced.

c. By the age of the queen. Old queens are never as fertile as they were when young. According to my observations, they are most fertile when one year old, or in their second year; and this accounts for the usually thriving condition, in the ensuing year, of second swarms and old stocks which have sent forth swarms.

d. By the shape and dimensions of the hive. Brood is most abundant in circular hives, and next in those which are square, because, in hives of these shapes, the heat is most equably diffused. Brood is less abundant in hives which are considerably longer than broad, and also less so in such as are flat and broad, than in those which are high and narrow, because, in low and horizontal hives, the rear portion of the interior is colder than the fore part. Brood is likewise naturally more abundant in large than in small hives; and the deteriorated condition of bee culture in this country may, in a large part, be ascribed to the diminutive size of the hives so generally used. In good honey districts, where pasturage continues abundant and available for a protracted term, small hives may answer tolerably well; but in poor honey districts, in which only populous colonies can labor with success during the short period which yields them supplies, bees must be kept in large hives, if they are to be *kept* at all.

e. By the character of the combs. Colonies having new combs with worker-cells, to the exclusion of drone-cells, will produce much more brood than those which have old combs or such as contain principally drone-cells. Where hives are managed on the *nadiring* system, a large quantity of drone-combs are sure to be built; and in process of time the bees in such hives become discouraged and disinclined to labor—doing so with their wonted energy, only for a few days in the height of the honey season. The production of drone-comb can be regulated or prevented altogether, when desired, only by the use of movable comb hives.

f. By keeping bees in warm hives, which contain plenty of store honey; and especially by stimulative feeding. Warm hives and a large stock of honey, within the reach of rich supplies of pollen, exert a powerful influence on the production of brood in the spring. But nothing has so encouraging an effect as a judicious resort to stimulative feeding, when a hive is populous and its queen vigorous. Dzierzon, indeed, rather discountenances the process; but experience has taught me that a proper use of it will cause the cells to be crammed with brood in an incredibly short time, and that colonies so treated produce the earliest swarms.

g. By populousness. The queen of a strong colony will lay much more fully, and commence doing so much earlier, than one associated with a feeble body of workers. The successful development of brood also requires a certain degree of heat in the hive; and this can only be seasonably generated and adequately diffused by a dense population.

3. What causes diminished brooding?

This question is in the main, at least indirectly, answered by what has already been stated. A few additional remarks may suffice.

a. In August, a diminished production of brood is perceptible in almost all colonies. Stocks which have yielded no swarms, and the earliest first swarms, will contain very little brood about the middle of September; and from the middle of October, hardly any will be found; except, in cases where diluted honey has been liberally fed —the results of which have no bearing on this question.

b. Strong colonies will, in *mild* winters, or when they have been protected from severe cold, contain some brood at about New Year, and very generally about the middle of January. I have ascertained these facts by repeated inspection of such colonies. Feeble stocks commence brooding about the middle of March, or not till the beginning of April. A strong stock, which I examined on the 18th of January, 1846, contained 162 chrysalids, 280 larvæ and 136 eggs. A month later, the same stock contained 716 chrysalids, 1204 larvæ and 918 eggs.

4. What causes a total cessation of a queen's fertility?

The queen's fertility decreases with advancing age. She lays more and more sparingly, and no longer deposits her eggs in close and regular order in the cells, but in a scattering, irregular manner. Finally, when the contents of her spermatheca are exhausted, brooding either ceases entirely, or only drones make their appearance. I reserve my remarks on this interesting condition of matters, for a future occasion.

(For the "Bee Journal.")

Drones and Drone Brood.

In practical bee culture, the production of a large number of drones is a grievous disadvantage. Yet, where ordinary hives are used, little can be done to prevent it. Even if the drone-combs are cut out, in such hives, wherever they can be got at, or shortened as much as possible, the evil is only remedied for a time or in part, as the bees most commonly fill the vacancy with the same kind of comb, and drones are produced almost as numerously as before. It is much easier to prevent the production of drones, where movable comb hives are used, than to destroy them after they are hatched; and careful apiarians usually effect it, by taking out the combs and decapitating the embryo brood, slicing off the convex caps and a small portion of the cells with a keen knife. Still, this too, is only a partial remedy and must be resorted to repeatedly, so long as drone-eggs and larvæ remain in the cells; for the bees will hatch and nurse these to maturity, if left to their own instincts. But if, after decapitating the sealed brood, the operator dip the comb in water before replacing it in the hive, the bees will not only throw out the mutilated embryos, but also the larvæ and the eggs, and the whole mass *in esse* and *posse* will thus be got rid of. If the bees are gathering honey plentifully at the time, it will be most likely stored in the combs thus treated, as the queen will not lay eggs in cells that are not thoroughly dry. It is, of course, preferable not to allow any drone-comb to remain in the brooding chamber of a hive, but to substitute worker-comb for it. All beekeepers, however, are not always prepared to do this; and they might, perhaps, convert drone-combs into honey receptacles exclusively, when the weather has become warm, by sprinkling them with water and placing them right and left in the chamber, setting the frames with worker-comb in the middle. Young queens instinctively prefer laying in worker-cells, and are not likely to pass into the remoter and cooler parts of the hive to lay in damp drone-comb, if any worker-cells centrally situated remain unoccupied. Let some beekeeper, who has more drone than worker-comb on hand, try the experiment. R. V.

Col. Fremont, in his Expedition in 1842, to his amazement found bees on the highest peak of the Rocky Mountains at an elevation of more than 1200 feet above the level of the sea. Humboldt supposes that those bees neither sought nor found honey at that height, but had been carried thither involuntarily by a strong upward current of air.

Humble Bees Topers!

Of the especial love of the humble-bees for the nectar of the Passion-flower, and the effect which it has on them, the following paragraph gives a graphic description.

"We regret extremely to announce that some honest humble-bees of our acquaintance have taken to drinking, and to such excess that they are daily found reeling and tumbling about the door of their houses of call—the blossoms of the Passion-flower, which flow over with intoxicating beverage; and there, not content with the drinking like decent bees, they plunge their great hairy heads into the beautiful goblet that Nature has formed in such plants, thrusting each other aside or climbing over each other's shoulders, till the flowers bend beneath their weight. After a time they become so stupid that it is in vain to pull them by the skirts and advise them to go home, instead of wasting their time in tippling. They are, however, good-natured in their cups, and show no resentment at being disturbed; on the contrary, they cling to their wine goblet, and crawl back to it as fast as they are pulled away, unless indeed they fairly lose their legs and tumble down, in which case they lie sprawling on the ground, quite unable to get up again."

If this account be not over-colored, these jovial, reckless proceedings of humble-bees are in strong contrast with the temperate habits of hive-bees, which, to judge from the interesting account Mr. Wailes has given of their visits to his Passion-flowers, hurried back to the hive as soon as they had imbibed their supply of nectar; and certainly the anecdote given by Huber, of the way in which humble-bees suffer themselves to be cajoled out of their honey by the hive-bees, indicates such a good-natured weakness of disposition as may easily be supposed to be combined with a propensity for carousing, when the opportunity presents itself. To speak seriously, however, it would be well worth ascertaining, by exact observations, whether as great a contrast between the temperance of humble-bees and hive-bees in feeding really exists, as between their easiness of temper. There can be no doubt that some races of insects vary as much in this last respect as some races of men. The difference as to irritability, between the temper of wasps and that of bees, is known to every one, but has never been so happily hit off as by Christopher North, (whose universal genius adorned every subject,) in the description of it which he has put into the mouth of the "Shepherd" in one of the *Noctes*, and which well deserves transcription here from the pages of the voluminous periodical in which it has lain entombed for thirty-five years.

"*Shepherd.*—O' a' God's creatures the wasp is the only ane that's eternally out o' temper. There's nae sic thing as pleasin' him. In the gracious sunshine, when the bees are at work murmurin' in their gauzy flight, although no gauze indeed be comparable to the filaments o' their woven wings, or, clinging silently to the flowers, sook, sookin' out the honey-dew till their verra doups dirl wi' delight—when a' the flees that are ephemeral, and weel contented wi' the licht and the heat o' ae single sun, keep dancin' in their burnished beauty, up and down, to and fro, and backwards and forward and sideways, in millions upon millions, and yet are never jostling against anither, but a' harmoniously blended together in amity, like imagination's thochts—why, amid this 'general dance of minstrelsy,' in comes a shower o' infuriated wasps, red het, as if let out o' a fiery furnace, pickin' quarrels wi' their ain shadows—then roun' and roun' the hair o' your head, bizzin' against the drum o' your ear till you think they are in at the ae hole and out at the ither—back again after makin' a circuit, as if they had repentit o' letting you be unharmed, dashin' against the face o' you who are wishin' ill to nae livin' thing, and although you are engaged out to dinner, stickin' a lang poishoned stang in just below your ee, that afore you can rin hame frae the garden swells up to a fearsome hicht, makin' you on that side look like a blackamoor, and on the opposite white as death, sae intolerable is the agony frae the tail o' the yellow imp that, according to his bulk, is stronger far than the dragon o the desert."

Blackwood's Mag. Oct. 1826.

(For the "Bee Journal.")

I have now seven apiaries, numbering in all between one and two hundred colonies. I transferred, this spring, near a hundred colonies of my own and others. It has been a very backward and hard spring on bees. A great number, throughout our country, abandoned their hives between the time the apple trees and the white clover blossomed, for want of honey. Those that were retained and fed, are doing well. Our white clover blossomed about the 15th instant; ten days later than usual. We expect our natural swarming about the 1st and 4th of July. I have made a number of artificial swarms, which are doing well. Clover blossoms now in great abundance, and the season may yet equal that of 1856—which was the best in our county for fifteen years.

SETH HOAGLAND.

Mercer, Pa., June 24, 1861.

[For the "Bee Journal."]

Drumming or Driving.

As many persons, in their endeavors to divide colonies by *drumming* or *driving*, fail of success from various causes, I wish to submit some practical remarks on the subject, and will describe the mode of proceeding I have adopted.

If a colony be liberally fumigated with tobacco smoke at the beginning of the operation, the bees will not ascend into the super-imposed hive either quickly or in large numbers. I would, therefore, advise new beginners not to use tobacco smoke on such occasions. A smoker may avail himself of a segar to keep the bees from his face, and find it a convenient protection, provided the segar is one that will burn pretty freely. For other purposes he should not think of using it, unless he has no alternative. I use rotten maple or willow wood, not worm-eaten or containing larvæ of insects, and find it far preferable to tobacco.

After blowing a little smoke into the hive to be operated on, I invert it and immediately drive the bees down among the combs by a free use of smoke. They at once begin to fill themselves with honey. Having kept them in this position three or four minutes, till they are well gorged, I blow smoke down the central part of the hive, between the combs, thereby driving the bees to the sides. I continue this till they begin to rise up to the edges. Then I set an empty hive on the other, and shut in the bees by wrapping a long and narrow strip of muslin, or a towel, around the junction of the two hives. I then commence drumming gently around the now lower sides of the hive, using two light long-handled mallets of pine wood. Actual pounding must be avoided, both because it has a tendency to confuse and irritate the bees, and also to loosen the combs from their side attachments. By proceeding in this manner, I have always succeeded in expelling a swarm in a short time, as the bees are, from the start, put in a condition favoring speedy emigration.

When inverting a hive, regard should be had to the direction in which the combs run. Never turn it over transverse to the breadth of the combs, but always parallel to the edges. The like caution is necessary, in re-inverting the hive after the operation, especially in warm weather, or the combs may be broken, or compressed by their own weight.

I prefer driving in the evening, just after the bees have ceased flying. They are then fatigued with the labors and heat of the day, and less disposed to sting than in the morning; and if the morning be cool, they will be less inclined to emigrate. I also avoid driving, when the bees are flying briskly, because, I do not like to interrupt their labors, when they are profitably employed.

If, after they have passed up into the upper hive, this be gently lifted and set on a clean, freshly planed bottom-board, the operator can generally satisfy himself, in a few minutes, whether the queen has accompanied them, as she will be compelled to drop her eggs, from the want of cells in which to deposit them, and these may be found on the board. Should none be seen, the presence of the queen may still be inferred, if the bees remain quiet in their new home, or do not commence running in quest of her, within half an hour. When it is not intended that the bees shall remain in the hive into which they were driven, but put into a movable comb hive, the latter should be set in readiness on a large sheet or cloth spread on the ground. The frames should be properly arranged and the blocks removed, so as to leave the entire passage-way or entrance clear. The bees should then be shaken down on the cloth about eighteen inches or two feet in front of the hive, and a few of them directed to the entrance, by means of a light stick or feather. These will immediately commence humming, thus attracting their companions, and the whole will speedily enter—crowding each other in their eager haste. Experienced operators usually look for the queen on this occasion; and seeing her in the crowd, is the best evidence of the success of the operation.

Having conveniences for so doing, I always carry the driven swarm to the residence of a friend, about two miles from my home, before hiving it, and leave it there three or four weeks. This enables me to replace the parent hive on its old stand. Experience has taught me that there are advantages resulting from this, which amply compensate for the trouble attending it. Those who have no such facilities, must place the new colony where the parent hive stood and transfer the latter to some other location. It is likewise a good precaution, in such cases, to supply the parent hive with a few table-spoonfuls of water daily, for a week, through a hole in the top of the hive, or by injecting it with a syringe. Bees having brood to nurse, require much water; and where the parent hive has been removed from its old stand, the want of it may occur, because, for some days after the removal, most of the bees which leave in quest of water do not return, but join the driven swarm on the old stand.

JAMES COLLUM.

Prevention of Swarming.

BY DZIERZON.

The heavy losses which beekeepers sustained in consequence of the unusually unpropitious season of 1860 and the severe winter which ensued, have convinced the hitherto incredulous that the practice of allowing the bees to follow their own instincts or whims in all cases, is far from being a rational system of bee culture. The system, which permits stocks to swarm when and as often as they please, does, indeed, occasionally produce satisfactory results in districts where fall pasturage abounds, if the weather be then favorable to the labor of the bees; but it may also, as last year's experience incontestibly proves, involve the total ruin of an apiary. The colony which is kept in a small hive with the intention that it shall swarm, will gather a smaller amount of supplies than it would have done if more ample room had been furnished. A portion of these supplies will be carried off by the departing swarms; and another portion of the remainder will be used, to enable the colony to recover its lost vigor. The swarms will devote the honey they appropriated when leaving, and much of what they afterwards gather, to comb-building and the nourishment of brood; and then, if the remainder of the season proves to be unfavorable, parent stocks and swarms will at its close, be found alike unprovided with stores for the winter. Excepting where buckwheat is extensively cultivated, fall pasturage is usually scant and of small account; and the bees will be only the worse off, if the weather permits them to fly when there is nothing for them to gather. Besides, with the exception of that yielded by buckwheat, the honey gathered from the blossoms of fruit trees, locusts, lindens, &c., is of much better quality, and assures a much more successful wintering, than such as is collected from wild flowers, &c., in autumn.

For these reasons many beekeepers are anxious to prevent or limit swarming, preferring to content themselves with a smaller yield of *good* honey, rather than jeopard the safety of their colonies. Others have not leisure to watch their apiaries, and thus suffer loss from absconding swarms, or are so situated that their swarms are apt to settle in inconvenient locations, and can only be secured and hived with great trouble, and occasionally at the risk of life. It is hence an interesting and important inquiry, whether swarming may not be prevented, and if so, *how?*

Undoubtedly, swarming may be prevented, but the process employed must be adapted to the varying circumstances. In some cases the simplest means—ventilation, enlargement of room, &c., suffice for the purpose; whilst in others more energetic and compulsive measures must be resorted to. Bees will not attempt to swarm when the requisite conditions for swarming do not exist or have been seasonably removed. Sealed royal cells and their maturing inmates impel the old queen to depart with the first swarm, and the same cause urges the departure of the first issuing young queen with the second swarm. If these royal cells or the queens be removed, swarming will certainly be prevented. Our common bees also will not swarm, or very rarely attempt it if furnished with a queen reared in the current year, nor will they usually build drone-comb or rear drone-brood; and, if populous, they will seldom fail to gather ample supplies of honey. In general, therefore, it may be regarded as an infallible preventive of swarming, to remove the old queen at the approach of the swarming season, and to destroy afterwards all the royal cells but one. If the bees were left solely to the operation of their own instinct, the mere removal of the old queen would be the most effectual means of inducing them to swarm at an early day; but since it is well known that nearly two weeks will elapse before a swarm will issue from a hive so treated, we have time to destroy the supernumerary royal cells at our convenience. But if we have a reserve queen at command, and introduce a fertile one a few days after the old queen was removed, the bees will commonly themselves destroy the royal cells they are constructing—particularly if the colony be at the same time weakened by transferring a portion of the workers, which may be used to form an artificial colony.

It will be obvious to the reader that the processes here suggested can be availed of only where movable comb hives are used—which may, however, serve as additional evidence that rational bee culture, properly so called, can only be practised with that kind of hive. But even with these, the inexperienced operator may encounter many unanticipated difficulties, and not unfrequently fail to accomplish his object. To find the queen, he may have to take out all the combs in succession; and if the hive is populous, the chances are ten to one that he will overlook her in the crowd. Practice alone can teach him where she is to be looked for; and so quicken his eyesight, as to enable him to detect her at a glance.

☞Always feed your bees for two or three days after they have swarmed, be the weather fair or foul. They will repay your attention and your liberality with usury, before the season is over.

[For the "American Bee Journal."]

Improved Colvin Guide Frames.*

Since the swarming season began, I have used a number of these sets of guide frames, and find that they answer admirably the ends intended—the combs being built, to use the words of a friend describing the results in his apiary, "as perfectly as a joiner could work with square and compass." Although the bees are sometimes inclined to abandon a hive containing such guides, they do not, after fairly beginning to work, seem to be at all incommoded by them; and the guides, not interfering with the storage of honey in the surplus boxes, may be left in the hive until those boxes are removed.

To prevent the bees from leaving, the guides may be inserted three or four days after hiving the swarm; by which time, they will have too much invested in comb, eggs and honey, to be willing to go off. If, however, the hive is placed as recommended in the July number, and the wings of the queen clipped, the guides may be used without any other precautions. Since writing that article, I have had several swarms attempt to leave; but in each instance the bees returned, and the queen crawled back to her hive.

The plan suggested in the July number, by Mr. Nesbit, will not answer, as the bees will *wave* their combs *below* the wire guides. If Mr. Nesbit will make wire guides of full length, he may secure straight combs; but he will find that such guides, whether of full length or made as he recommends, are much more expensive, complicated, and difficult to adjust, than the improved guides, while like those of tin, they cannot serve for *regulating the frames* and *holding them firmly together*. If my object was merely to obtain combs straight enough to "be taken out easily by an experienced hand," I should never use the guide frames. But Mr. Nesbit will find, in the management of a large apiary, much labor and perplexity, unless the combs are "not only *straight* but of *uniform thickness*, so that every comb will fit, without trimming, anywhere in any hive." He will also find that bees, left to themselves, will seldom build such combs.

Oxford, Ohio. L. L. LANGSTROTH.

* In the description of these frames, in the June number of the Journal, several mistakes occurred. 5 and 7 are each 9¼ inches long, by ½ inch *wide* and ¼ inch *thick*; and *eight* frames make a set.

☞ We are still printing heavy editions of the "Bee Journal," and will be pleased to supply our friends with copies for gratuitous distribution.

[For the Bee Journal.]

Ed. Bee Journal.—Sir: I send you a question for your Journal, and hope it will find a correct answer.

What is the difference between the pure Italian bees and half-blooded ones, mixed either with a common drone and Italian queen, or Italian drone and common or American queen?

In the January number of your Journal, page 16, a description is given, by the Rev. George Kleine, of the Italian bee. "In the workers, the first three upper segments of the abdomen are a bright orange color, though the lower margin of the third segment is black."

I have seen Italian workers answering to the above; the first three upper segments being a bright orange color.

The first segment, being so very small, is scarcely noticed; the second is the broadest, and would be considered the first by many persons, and the third, the second.

I suppose the pure Italian bee has one broad segment colored with orange, and the next or second one nearly all colored, except the lower margin, which is black. But are they constant in color? If some have only one segment colored (the first broad one), and some again only half-colored, and some still less, being nearly or quite like the common bee, are they considered pure?—that is from the full marked ones on down to the common? If so, then how are the half-blooded ones? Have they as much as one or part of a segment striped, and so down to nothing, even with the common ones? Or have they no orange-stripe at all?

The above questions, I hope, will find correct answers, especially from those who have the pure Italians for sale. This would be satisfactory to all who contemplate purchasing the Italian bee. Perhaps some who have both the *pure* and the *mixed* Italians, can give the best answer to the above questions; also as to queens and drones.

Frenchtown, N. J., June 24, 1861. S.

MR. ROTHE speaks of an Italian queen, fecundated by a common drone, which produced Italian workers exclusively, and regards her as pure. According to my theory she must be classed among the bastardized. Such a queen can by no means be considered genuine. Her progeny may be marked and colored like the Italian workers; but she herself is no longer genuine, as the color and characteristics of the young queens reared from her worker-brood will conclusively prove. They will be dark, and the majority of them very dark. DZIERZON.

[For the "Bee Journal."]

New Mode of Hiving Bees.

In the last number of the Bee Journal, I gave a new method for preventing swarming, by clipping the wings of the queen and placing the alighting board so low that she can crawl back to her hive. It has since occurred to me, that this same arrangement may not only be used to prevent swarming, when desired, but to secure the swarm with the least labor.

As soon as the swarm issues, let the beekeeper look for the queen, and when he has found her, cover the parent stock with a large sheet (or remove it to a new place), setting the hive intended for the swarm directly before it. As soon as the returning bees begin to alight before the new hive, their queen may be given to them; and when they have entered, the hive may be removed to a new place. If the sheet be spread before the old hive as soon as the bees begin to issue, the queen will be much more easily found; and in case she is not found in season, the returning swarm will accept of any fertile queen taken from a nucleus box.

I have devised a way of clipping the wings of a queen, so as to designate her age. As soon as she becomes fertile, let her wings on one side be cut off with a pair of scissors. When the hives are examined next year, let one of her two remaining wings be removed, and the last one the third year. By adhering strictly to this plan, we always know as soon as we see her, the age of any queen.

For some years, I have been lamenting the loss of those youthful eyes with which, after long practice, I could see a queen almost at the first glance, in examining a comb or after shaking a swarm upon the hiving sheet. The brilliant colors of the Italian queens have almost, if not quite, supplied the loss of failing vision and enable even spectacled eyes to find them with surprising ease, as they are much more easily distinguished from Italian workers, than are common queens from common workers. By those who know the great saving of time, in being able quickly to find the queen, the Italian variety would be highly prized, if it was not in any other respect better than the black bee.

For this, as well as other reasons, I would advise all engaged in rearing these queens, to retain only such as are well colored.

Oxford, Ohio. L. L. LANGSTROTH.

"O, balmy, breezy, bounteous, beauteous summer!
To men and women, little girls and boys,
To birds and beasts thou bringest many joys,
And art, indeed, a truly welcome comer!"

[For the "Bee Journal."]

I am desirous of hearing through your valuable paper, an answer to the following inquiry. I see, by advertisements of different parties, several kinds of Movable Comb Hives offered, which claim to be different patents, or to belong to different persons. As there are many beekeepers that will, this coming season, invest money in such hives, and as the Patent Office never issues two patents for the same invention, what hive can a subscriber purchase and secure the movable comb principle, and not be held liable to other parties for infringements? Should I purchase of Harbison or of Flanders, would I be safe in the use of it? As the Journal is devoted to the interest of beekeepers, a word or two might, perhaps, save innocent persons from being swindled. SUBSCRIBER.

☞ The inquiry addressed to us above, involves a legal question, which it is not *our* province to decide, even if we were in possession of all the facts needed to form a correct opinion. We have a very thorough conviction of the superiority of movable comb hives, and believe that no intelligent beekeeper can fail to see in what that superiority consists. But the other point, we must needs leave to the judgment of the proper legal tribunal.

EXCELLENT ADVICE.

If thou wilt have the favor of thy bees, that they sting thee not, thou must avoid some things which offend them. Thou must not be uncleanly; for impurity and sluttishness (themselves being most chaste and neat,) they utterly abhor. Thou must not come among them smelling of sweat, or having a stinking breath, caused through eating of leeks, onions, garlic and the like. Thou must not be given to surfeiting or drunkenness; thou must not come puffing and blowing unto them, neither hastily stir among them, nor resolutely defend thyself when they seem to threaten thee; but softly moving thy hand before thy face, gently put them by. And lastly, thou must be no stranger to them. In a word, thou must be chaste, cleanly, sweet, sober, quiet and familiar; so will they love thee and know thee from all others.—

BUTLER.

☞ It has been observed long since that, in some seasons and on some soils, buckwheat when in blossom remains unvisited by bees or is visited by a comparatively small number only. A Mr. Bartels stated that in such cases the buckwheat yields no honey, or only little here and there in spots, and that the consequence is a poor crop of grain at harvest time, or an entire failure. Can any of our bee keeping farmers inform us whether this statement is correct?

[For the "Bee Journal."]

Messrs. Editors.—I have had an opportunity of reading a number of the "*American Bee Journal*," and wish to obtain all the back numbers if you can furnish them, and consider me a subscriber for the current year—for which I enclose one dollar ($1). Direct to Rev. Byron Porter, as below.

A fact mentioned in the March number, by Dr. Asmusz of Podolsk, I have also observed to some extent, "that first swarms build their combs from front to rear in their hives; and the second after swarms build them from side to side."

I have the movable frame hive, and last summer the first swarms built on the frames regularly; a second or after swarm built from side to side, in the same kind of a hive.

If "Both Sides of the Grape Question" is yet a premium for subscribers, you may include it.

Yours respectfully, BYRON PORTER.

Shelocta, Pa., June 27, 1861.

[For the "Bee Journal."]

A MONSTER QUEEN BEE.

In examining a stock of Italian bees some weeks after it had swarmed, I found the largest unfertile queen I have ever seen. Her wings were shrivelled and the extremity of her abdomen almost as blunt as that of a drone. Her colors were extremely brilliant. After the stock swarmed, I removed all the queen-cells but one, and this, being the largest I ever saw, caused me to look forward with great interest to the proper time for the development and impregnation of its inmate. Had the stock been in a hive giving no control of the combs, it would have perished, and the cause of its ruin never have been known.

L. L. LANGSTROTH.

☞ To rear Italian queens early, Dzierzon removed the two central worker-combs from one of his hives in February, and inserted drone-combs in their place. The queen speedily supplied these with eggs which hatched; but the workers promptly removed and cast out the larvæ; so that not a drone matured. Suspecting the cause, he removed the queen after she had re-supplied these cells with eggs; and re-examining the hive four or five days after, he found the drone-brood was now well nursed and some of the cells already partially capped. The bees, conscious that drones would soon be needed, were now anxious to foster the brood, which they had before been unwilling to cherish.

☞ *Please send us the names of beekeepers.*

Song of the Bees.

BY HANNAH F. GOULD.

We watch for the light of the moon to break
And color the eastern sky,
With its blended hues of saffron and lake,
Then say to each other, "Awake! Awake!
For our winter's honey is all to make,
And our bread for a long supply."

And off we hie to the hill and the dell,
To the field, to the meadow and bower;
We love in the columbine's horn to dwell,
To dip in the lily with snow-white bell,
To search the balm in its odorous cell,
The mint and the rosemary flower.

We seek the bloom of the eglantine,
Of the pointed thistle and briar;
And follow the steps of the wandering vine,
Whether it trail on the earth supine,
Or round the aspiring tree-top twine,
And reach for a state still higher.

While each, on the good of her sisters bent,
Is busy and cares for all;
We hope for an evening with hearts content,
For the winter of life without lament
That summer is gone, its hours misspent,
And the harvest of life is past recall.

☞ During the period when bees can gather honey, those on whom that department of labor devolves, do not consume pollen. They subsist, for the time on honey alone, and eschew all cruder nutriment—obviously to keep their bodies as light as possible, and thus better qualified for flying. At such time the nursing bees and the wax producers alone mix pollen with their food, to enable them to nurture the brood properly and to promote the secretion of wax. The nursing bees leave their post only once a day if the weather be fair, generally accompanying the young bees which issue to make the first experimental trial of their wings. If prevented by unfavorable weather for several days in succession from issuing and gamboling in company with their rollicking nurselings, they are apt to become diseased; and when the confinement is of long continuance, the consequences may be fatal to those who so faithfully adhere to the discharge of their functions.

M. VON MORLOT says that dysentery does not occur among bees in summer, because they then have an abundant supply of pollen, and can fly out at all times.

Bee Culture in Common Hives.

No. II.

BY F. W. GUNDELACH.

When, towards the close of January or in the early part of February, the snows of winter have disappeared and the thermometer in the open air indicates a temperature of at least 43° Fahr., if the weather be clear, I remove the boards or blinds from before my hives, hitherto sheltered from the direct rays of the sun, that the genial warmth may induce the bees to fly and discharge their fæces. My hives are so constructed as to have an entrance in each section; and as soon as I perceive that the bees are roused and preparing to come forth, I open all these entrances to enable them to issue promptly and freely, *en masse*, without crowding or incommoding each other in the passage ways. They are thus able to make quick work of it, without either soiling each other or the exterior of the hives.

On the first mild day thereafter, I change the bottom board of all my hives. Commencing at one end of a row, I remove the bottom board of the first hive, substituting a clean and dry one in its place. Then having cleansed the removed board, I substitute it for that of the second hive; and thus proceed in regular succession to the last —one extra board thus enabling me to effect the cleansing of the whole number. By this process, all the dead bees and the droppings of wax, &c., which have accumulated during the winter, are quickly disposed of, saving the workers much hazardous labor at the more inclement season, and depriving the larvæ of the bee moth of a favorite and fostering lurking place. I have found it useful and conducive to the health of the bees, moreover, to change the bottom boards in this manner, at intervals of about two weeks, according to the state of the weather, till the spring fairly opens. This insures perfect cleanliness, and affords the apiarian an excellent opportunity to acquaint himself with the condition of each colony, so that proper measures may be seasonably resorted to, in the case of such as appear to be queenless or prove to be weak.

If I find any mouldy combs, I carefully cut them out and remove them. If a colony has lost many bees during the winter, so as to be unable to cover the combs properly, I reduce the size of the hive by taking away the lowermost ring or section. A weak colony will recover sooner and increase more rapidly in a small hive than in a large one, because the requisite degree of warmth can, in such, be more easily maintained and more equally diffused. At this season, the hives should sit close on the bottom boards, without leaving crevices through which warm air can escape or cold air enter.

In healthy and ordinarily populous colonies, brooding will commence soon after the bees have had an opportunity to discharge their fæces. In strong colonies, well furnished with stores of pollen and honey, it frequently, indeed, begins much earlier. But in feeble stocks, in which there is, consequently, a deficiency of heat, the queen will rarely begin to lay till the weather becomes warm. At first she lays only a few eggs, because the workers are not numerous enough to cover a large area of brood-comb properly, or nurse the larvæ with the constant attention which these require in their early stage.

From all this, it is evident that weak colonies can only increase their population by slow degrees. They frequently require still to be fed, when stronger stocks have already accumulated a considerable amount of stores. Hence, such colonies afford their owner little gratification, after all the pains he took for their preservation during the winter. Uniting weak stocks early in autumn cannot, therefore, be too highly commended, and should be universally adopted.

The bees usually begin to carry in pollen in March; though in mild seasons, and in sections where the willows, the alder and the hazel produce their catkins early, they will collect this substance in February. It is used by them principally in preparing food for the larvæ; and for the same purpose they carry in no inconsiderable quantity of water at this period, when the weather permits them to fly.

If the precaution was taken the previous summer to remove all queens that had reached their third year, so that all the colonies wintered had young, or at least comparatively young, queens, queenlessness in the spring will be of rare occurrence in an apiary. Queens rarely die of disease; most commonly of superannuation. But should a queenless colony, nevertheless, be discovered, the shortest and best mode of disposing of it, is to unite it forthwith with its next neighbor. This is most conveniently done by setting the queenless hive on top of the other, after shortening the combs somewhat, and opening the hole in the apex of the lower hive. Any crevices or interstices between the two hives, and the entrance of the upper one, must be closed with moist clay. The queenless bees will descend into the lower hive and unite with its population. The combs of the upper hive will be protected and cleansed by the bees, and it may be subsequently used for hiving an

early swarm, to which such ready furnished quarters will prove an acceptable outfit.

Almost all bee books describe the signs or symptoms by which queenlessness may be detected. Minute and precise as most of them are, I have generally found them to be delusive. The bees of a colony still populous, *which has drone-brood in the cells*, will fly as actively, gather honey and pollen as industriously, guard the entrance as carefully, and fan as vigorously, as those of a colony containing a healthy, fertile queen. In my judgment, the only infallible criterion of the presence of a queen, is the existence of capped worker-brood in the cells. This may easily be ascertained by inverting a hive and driving back the bees with a few whiffs of smoke, so as to be able to look down between the combs and see what they contain. Still, this can only be resorted to with success, after brooding has or ought to have made some considerable progress. Very early in the season it is unavailable.

It is a useless waste of time, at this season, to retain a queenless colony and supply it with eggs or larvæ to raise a queen. The bees will rarely undertake to raise one; but if they should, and be successful, the young queen will, from the want of drones, hardly become fertile before the middle of May; and the population will, meanwhile, have been so greatly reduced, before a new generation of workers can come upon the stage, that there is little prospect of any favorable result ultimately. An early union with a normal colony is, therefore, much the preferable mode of treating the case.

When the bees begin to gather honey plentifully, the heavier stocks should be occasionally examined, to see whether they are not deficient in empty combs; for, when these are wanting, while pasturage abounds, bees will frequently sacrifice eggs and larvæ to obtain storage room for honey. This produces a two-fold injury—checking the increase of population by the destruction of the existing brood, and depriving the queen of her usual facilities for depositing eggs. Such a colony is not likely to swarm, unless its true condition is seasonably discovered and a portion of the honey in sealed combs removed, or additional room afforded by an enlargement of the hive. If room be thus given, a portion of the honey gathered will be devoted to comb-building, and brooding will be continued without interruption.

If colonies have been reserved for wintering, whose stores are inadequate to serve them till the early spring blossoms furnish new supplies, feeding must, necessarily, be resorted to. The weight of the contents of a hive, enables us to judge pretty accurately whether there is a sufficiency of stores or not. If it falls below 11 lbs. net, the bees will need feeding, even if the combs are still new and light. If dead and disembowelled larvæ are found on the bottom board or at the entrance of the hive, it is a sure indication that there is very little, if any, honey remaining, and that hunger is constraining the bees to devour the brood. They must immediately be fed, or starvation awaits them; but it is in any case a proof of bad management, when bees are permitted to fall into so deplorable a condition.

The best mode of feeding, ordinarily available, is to give them honey in the comb, placed on the top of the hive in such a manner as to be accessible to the bees, without exposing them to the inclemency of the weather or the attacks of other colonies. When such honey is not at command, diluted honey may be substituted. This should be poured into a tumbler, covering it with a piece of coarse linen securely tied, and inverting it over the hole in the top of the hive. Over the tumbler, a small wooden box or an earthen pot should be inverted for protection. Feeding from below, that is, placing the vessel containing the honey in the hive below the combs, is injudicious, because, in cold weather, the bees of feeble colonies cannot avail themselves of it, or many will perish in the attempt; and it is unsafe, because, in mild weather, it will be apt to attract bees from other stocks, and may lead to the destruction of the colony by robbery.

The honey fed should not be so much diluted as to flow through the linen drawn over the mouth of the tumbler; and it should be slightly warmed before it is offered. I do not here advert to the use of candy or other substitutes, which bee-keepers generally cannot so readily obtain, nor so conveniently administer. Let honey be used in the manner indicated, and see to it that the tumbler be replenished as often as necessary.

Prof. ZENKER marked a number of bees with a solution of ochre, and found by observation that these left their hive five times in quest of honey, between half past five in the morning and noon —visiting a rape field in blossom, one-third of a mile distant. He could not discover that any of these marked bees left the hive in the afternoon of the same day.

Propolis dissolved in spirits of wine or turpentine has been used for varnishing tin and other polished metals, tinging them a lemon color, and protecting them from rust.

(From the "London Quarterly.")

The Honey Bee.

(SECOND MODICUM.)

In an arable country, with little waste land and good farming, very few stocks can be supported; and this has led some enthusiastic beemasters to regret the advancement of agriculture, and the consequent decrease of wild flowers—or weeds, according to the eye that views them—and the enclosure of wastes or commons. Even a very short distance will make a great difference in the amount of honey collected. We know of an instance where a beekeeper at Carshalton, in Surrey, suspecting from the fighting of his bees and other signs, that there was not pasturage enough, conveyed away one of his lightest and most worthless hives, and hid it in the Woodmansterne furzes, a distance of about a mile and a half. Fortunately it lay there undiscovered, and on removing it home he found that it had become one of his heaviest stocks. We mention this as a case coming under our own knowledge, because a late writer, who has shown rather a waspish disposition in his attacks on Mr. Cotton's system, seems to question not only the advantage, but the practicability of the transportation of hives altogether. But the fact is, that in the north of England and Scotland, where there are large tracts of heather-land apart from any habitation, nothing is more common than for the beemasters of the towns and villages to submit their hives, during the honey-season, to the care of the shepherd of the district. "About six miles from Edinburgh," says Dr. Bevan, "at the foot of one of the Pentland Hills, stands Logan House, supposed to be the residence of the Sir William Worthy celebrated by Allen Ramsay in his 'Gentle Shepherd.' The house is at present occupied by a shepherd, who about the beginning of August receives about a hundred bee-hives from his neighbors resident beyond the hills, that the bees may gather honey from the luxuriant blossoms of the mountain-heather." Mr. Cotton saw a man in Germany, who had two hundred stocks, which he managed to keep all rich by changing their places as soon as the honey-season varied. Sometimes he sends them to the moors, sometimes to the meadows, sometimes to the forests, and sometimes to the hills. He also speaks of it being no uncommon sight in Switzerland to see a man journeying with a bee-hive at his back.

There is something very interesting and Arcadian in this leading of the bees out to pasture, and it deserves more attention than it has yet met with in this country. The transportation we have hitherto spoken of is only to a short distance and on a small scale; but in Germany traveling caravans of these little wild beasts may be met with, which sometimes make a journey of thirty miles, taking four days to perform it. There is nothing new in this transmigration, for Columella tells us that the inhabitants of Achaia sent their hives into Attica to benefit by the later-blooming flowers. The most pleasing picture, however, of all, is that of the floating bee-houses of the Nile, mentioned by old and modern writers, and thus described by Dr. Bevan:—

"In lower Egypt, where the flower-harvest is not so early by several weeks as in the upper districts of that country, this practice of transportation is carried on to a considerable extent. About the end of October, the hives, after being collected together from the different villages, and conveyed up to the Nile, marked and numbered by the different individuals to whom they belong, are heaped pyramidally upon the boats prepared to receive them, which, floating gradually down the river, and stopping at certain stages of their passage, remain there a longer or shorter time, according to the produce which is afforded by the surrounding country. After travelling in this manner three months, the bees, having culled the perfumes of the orange-flowers of the Said, the essence of roses of the Faicum, the treasures of the Arabian jessamine, and a variety of flowers, are brought back about the beginning of February to the places from which they were carried. The productiveness of the flowers at each respective stage is ascertained by the gradual descent of the boats in the water, and is probably noted by a scale of measurement. This industry procures for the Egyptians delicious honey and an abundance of wax. The proprietors, in return, pay the boatmen a recompense proportioned to the number of hives carried about from one extremity of Egypt to the other."

Such a convoy of 4000 hives was seen by Niebuhr on the Nile, between Cairo and Damietta. An equally pleasing account is given by Mr. Cotton of the practice in France:—

"In France they put their hives in a boat, some hundreds together, which floats down the stream by night and stops by day. The bees go out in the morning, and return in the evening; and when they are all back and quiet, on the boat floats. I have heard they come home to the ringing of a bell, but I believe they would come home just the same, whether the bell rings or not."

"I would like," he continues, "to see this tried on the Thames, for no river has more bee food in the spring; meadows, clover, beans, and lime-trees, in different places and times, for summer."

Happy bees, whose masters are good enough to give them so delightful a treat! We can fancy no more pleasing sight, except it be the omnibusses full of school-children that are sometimes seen on a fine summer's day making for the hills of Hampstead or Norwood.

Connected with their transmigrations is the question of the extent of their flight. We believe that two miles may be considered as the radius of the circle of their ordinary range, though circumstances will occasionally drive them at least a mile further. We have read somewhere of a man who kept bees at the top of his house in Holborn, and wishing to find out where they pastured, he sprinkled them all with a red powder as they came out of the hive in the morning. Away he hied to Hampstead, thinking it the best pasture at hand, and what was his delight at beholding among the multitude of busy bees that he found there some of his own little fellows which he had "incarnardined" in the morning! The apiary of Bonner, a great bee observer, was situated in a garret in the centre of Glasgow, and that of Mr. Payne, the author of the "Bee Keeper's Guide," is in the middle of a large town.

Judging from the sweep that the bees take by the side of a railroad train in motion, we should set down their pace at about thirty miles an hour. This would give them four minutes to reach the extremity of their common range. A bee makes several journeys from and to the hive in a day; and Huish remarked that a honey-gathering bee was absent about thirty-five minutes, and a pollen-collector about half that time. The pollen or farina of flowers is doubtless much more plentiful and accessible than the honey. The same writer observed bees on the Isle of May, at the entrance of the Frith of Forth, though there was no hive kept on the island, which is distant four miles from the mainland. This is an amazing stretch of flight, considering the element over which they have to fly, the risk of finding food when they land, and the load they have to return with, if successful. Were they not wild bees of the island?

In speaking of the food of bees, we must not omit the honey-dew. This shining, gummy substance must have been often noticed, in hot weather, on the leaves of the linden, the oak, and the chestnut, by the most incurious observer. The ancients considered it either as a deposition of the atmosphere, or an exudation from the leaves of trees; for to these opinions the "*ærii mellis cœlestia dona*," and "*quercus sudabunt roscida mella*," of Virgil seem to refer. Gilbert White held the singular notion that it was the effluvia of flowers evaporated and drawn into the atmosphere by the heat of the weather, and then falling down again in the night with the dews that entangle them. Its origin is certainly one of those vexed questions, which, like that of "fairy rings," yet require further light for a satisfactory explanation. At present it is impossible to reconcile the discrepancy in the observations of naturalists, some actually asserting that they have seen showers of it falling. To adjust the most common opinions, it is now generally admitted that there are two sources, if not two kinds, one being a secretion from the leaves of certain plants, the other a secretion from the body of an insect. Those little green insects, the aphides, which we commonly call blight, are almost always observed to accompany any large depositions of honey-dew, and are said to have the power of jerking it to a great distance. The subject at the present moment is attracting great attention among our naturalists, and it is probable that the clash of opinions will bring out something very near the truth. That the aphides do secrete a saccharine fluid has been long known, and the bees are not their only fellow-insects who are fond of it. Their presence produces a land of milk and honey to the ants, which follow them wherever they appear, and actually herd them like cows, and milk them, according to the statement of Kirby and Spence.

Much has been written upon the poisonous effects of certain plants, sometimes upon the honey, sometimes upon the bees themselves. Every schoolboy must remember the account given by Xenophon of the effect produced by the honey in the neighborhood of Trebizond. The soldiers suffered in proportion to the quantity they had eaten; some seemed drunken, some mad, and some even died the same day. This quality in the honey has been referred by Pliny and others to the poisonous nature of the rhododendron, which abounds in those parts; but from inquiries which we have made at Dropmore and other spots abounding with this shrub, we cannot learn that any difference is perceived in the honey of those districts, or indeed that the common bee is even seen to settle on its flowers. If the Kulmia latifolia be a native of Pontus, the danger is more likely to have arisen from that source, the honey derived from which has been known to prove fatal in several instances in America.

One remarkable circumstance about bees is the number of commodities of which they are either the collectors or confectioners. Besides honey and wax, there are two other distinct substances which they gather, bee-bread and propolis.

Before we knew better, we thought, probably with the most of our readers, when we saw a bee

"tolling from every flower the virtuous sweets," with his legs full of the dust of the stamens, that he was hurrying home with the wax to build his cell, or at least with the materials wherewith to make that wax. We thought of Titania and her fairies, who "for night-tapers crop their waxen thighs," and many other pretty things that poets have said and sung about them; or if in a more prosaic mood, we at least conceived that, if not furnishing fairy candles, they were laying the foundations for what Sir F. French calls "the gentleman's light." No such thing. Their hollow legs were filled with the pollen or farina of flowers, which has nothing whatever to do with the composition of wax, but constitutes the ambrosia of the hive—as honey does its nectar—their bee-bread, or rather, we should say, bee-pap, for it is entirely reserved for the use of their little ones. Old Butler had long ago remarked that "when they gather abundance of this stuff (pollen) they have never the more wax. when they make most wax, they gather none of this." In fact they store it up as food for the embryo bees, collecting from thirty to sixty pounds of it in a season; and in this matter alone they seem to be "unthrift of their sweets," and to want that shrewdness which never else fails them, for they often, like certain over-careful housewives with their preserves, store away more than they can use, which in its decomposition, becomes to them a sore trouble and annoyance. They are said always to keep to one kind of flower in collecting it, and the light and red color of it will often detect them as the rifiers of the mignionette-bed; but we have seen them later in the season with layers of different colors, and sometimes their whole bodies sprinkled with it, for they will at times roll and revel in a flower like a donkey on a dusty road.

Whence then comes the wax? It is elaborated by the bee itself from the honey by a chemistry beyond the ken of either Faraday or Liebig, being exuded in small scales from between the armour-like folds of their body. This was noticed almost contemperanously by John Hunter and Huber, and confirmed by the most conclusive experiments of the latter. A legal friend, to whom we are indebted for most of our bee-law, thus records his own observation:—"I have often watched these fellows hanging apparently torpid, after, as I think, a plentiful meal. Suddenly they make their whole persons vibrate like the prong of a tuning fork; you cannot see their outline. This is a signal for one of the wax-collectors to run up quickly and fumble the lately agitated gentleman with the instruments with which they hold the wax; and after collecting the scales, they hasten to mould them into the comb. "What would our *bon-vivans* give if they could thus, at their pleasure, shake off the effects of a Goldsmith's Hall dinner in the shape of a temporary fit of gout and chalk-stones?

Many in their schoolboy days, though we aver ourselves to be guiltless, having too often followed Titania's advice, and

"Honey-bags stolen from the humble-bee,"

need not to have much told them how they carry about their liquid nectar. "Kill me," says Bottom to Cobweb, "a red-hipped humble-bee on the top of a thistle, and, good monsieur, bring me the honey-bag." They never swarm without a good stock of honey in their inside, to enable them to make a fair start in their new house-keeping. The honey which they sip from the nectaries of flowers probably undergoes some change, though it be but a slight one, before it is deposited in the cells. It was formerly considered a balm for all ills, though now deemed anything but wholesome when eaten in large quantities. The following are some of its virtues, besides others which we omit, given by Butler. It is only wonderful that our grandfathers, living in the midst of such an universal medicine, should have ever died.

"Honey cutteth and casteth up phlegmatic matter, and therefore sharpeneth the stomachs of them which by reason thereof have little appetite; it purgeth those things which hurteth the clearness of the eyes: it nourisheth them very much: it breedeth good blood: it stirreth up and preserveth natural heat, and prolongeth old age: it keepeth all things uncorrupt which are put into it: and therefore physicians do temper therewith such medicines as they mean to keep long; yea the bodys of the dead, being embalmed with honey, have been thereby preserved from putrefaction," &c., &c.

The fourth product of the bee is propolis, or which we shall rather call bee-gum. It is at once the glue and varnish of their carpentry. With this resinous substance, (quite distinct from wax) they fix their combs to the sides and roof, fasten the hives to the stand, stop up crevices, varnish the cell-work of their combs, and embalm any dead or noxious animal that they catch within their hive:—

"Caulk every chink where rushing winds may roar,
And seal their circling ramparts to the floor."—EVANS.

Bees may often be seen settling on the ramparts of the fir, the gummy leaf of the hollyhock, or on the—we dare not use Horace Walpole's expression—varnished bud of the horse-chestnut. They are then collecting neither bread nor honey, but

gum for the purposes above mentioned. Huish mentions a case of their coating over a dead mouse within the hive with this gum, thus rendering their home proof against any impure effluvium; but they were much more cunning with a snail, which they sealed down, *only round the edge of the shell*, thus fixing him as a standing joke, a laughing-stock, a living mummy (for a snail, though excluded from air, will not die), so that he who had before carried his own house was now made his own monument.

As one of the indirect products of the bee we must not forget mead, the metheglin of Shakspeare and Dryden. It was the drink of the ancient Britons and Norsemen, and filled the scull-cups in the Feast of the Shells in the Hall of Odin. In such esteem was it held, that one of the old Welsh laws ran thus: "There are three things in court which must be communicated to the king before they are made known to any other person:—1st. Every sentence of the Judge. 2d. Every new song. 3d. Every cask of Mead." Queen Bess was so fond of it, that she had some made for her own special drinking every year; and Butler, who draws a distinction between mead and metheglin, making *hydromel* the generic term, gives a luculent recipe for the latter and better drink, the same used by "our renowned Queen Elizabeth of happy memory." The Romans softened their wine sometimes with honey, sometimes with mead —mulso.

"The good bee," says More, "as other good people, hath many bad enemies," and though opinions and systems of management have changed, the bees' enemies have remained much the same from the time of Aristotle. Beetles, moths, hornets, wasps, spiders, snails, ants, mice, birds, lizards and toads, will all seek the hives, either for the warmth they find there, or oftener for the bees, and more frequently still for the honey. The wax-moth is a sad plague, and when once a hive is infested with it, nothing effectual is to be done but by removing the bees altogether into a new domicile. Huish tells of an old lady, who, thinking to catch the moths, illuminated her garden and bee-house at night with flambeaux—the only result of which was that, instead of entrapping the marauders, she burnt her own bees, which came out in great confusion to see what was the matter. The great death's head moth (Sphinx atropus) occasionally found in considerable numbers in our potato fields—the cause of so much alarm wherever its awful note and badge are heard and seen—was noticed first by Huber as a terrible enemy to bees. It was against the ravages of this mealy monster that the bees were supposed to erect those fortifications, the description and actual drawing of which by Huber threw at one time so much doubt on his other statements. He speaks of bastions, intersecting arcades, and gateways masked by walls in front, so that the constructors "pass from the part of simple soldiers to that of engineers." Few subsequent observers have, we believe, detected the counterscarps of these miniature Vaubans, but as it is certain that they will contract their entrance against the cold of winter, it seems little incredible that they should put in practice the same expedient when other necessities call for it: and to style such conglomerations of wax and propolis, bastions, and battlements, and glacis, is no more unpardonable stretch of the imagination than to speak of their queens and sentinels.

An old toad may sometimes be seen sitting under a hive, and waiting to seize on such as, coming home loaded with their spoil, accidentally fall to the ground. We can hardly fancy this odious reptile in a more provoking position. Tomtits, which are called bee-biters in Hampshire, are said to tap at the hive, and then snap up the testy inmates who come out to see what it is all about: if birds chuckle as well as chirp, we can fancy the delight of this mischievous little ne'er-do-good at the success of his *lark*. The swallow is an enemy of old standing, as we may learn from the verses of Euenus, prettily translated by Merivale:

"Attic maiden, honey-fed
Chirping warbler, bear'st away
Thou the busy buzzing bee,
To thy callow brood, a prey?

Warbler thou, a warbler seize!
Winged, one with lovely wings!
Guest thyself, by summer brought,
Yellow guest, whom summer brings!"

Many are the fables and stories of the bear and the bees, and the love he has for honey. One, not so well known, we extract from Butler. The narrator is one Demetrius, a Muscovite ambassador sent to Rome.

"A neighbor of mine," said he, "searching in the woods for honey, slipped down into a great hollow tree; and there sunk into a lake of honey up to the breast: where, when he had stuck fast two days, calling and crying out in vain for help (because nobody in the meanwhile came nigh that solitary place—at length, when he was out of all hope of life, he was strangely delivered by means of a great bear, which coming thither about the same business that he did, and smelling the honey (stirred with his striving), clambered up to the top of the tree, and thence began to let himself down backward into it. The man, bethinking

himself, and knowing that the worst was but death (which in that place he was sure of,) beclipt the bear fast with both his hands about the loins, and withal made an outcry as loud as he could. The bear, being thus suddenly affrighted (what with the handling, and what with the noise), made up again with all speed possible. The man held and the bear pulled until with main force he had drawn *Dun out of the mire:* and then, being let go, away he trots more afeared than hurt, leaving the smeared swain in a joyful fear."

The bear, from his love of honey, acts as a pointer to the bee-hunters of the North, who note the hollow trees, which he frequents and rubs against, knowing thereby that they contain honey. "The bear," said a bee-hunter to Washington Irving, "is the knowingest varmint for finding out a bee-tree in the world. They'll gnaw for days together at the trunk till they make a hole big enough to get in their paws, and then they'll haul out the honey, bees and all."

Wasps are sad depredators upon bees, and require to be guarded against. The large mother-wasp, which is often observed quite early in the spring, and which common people call a hornet, should always be destroyed, as it is the parent of a whole swarm. In many places the gardeners will give sixpence a-piece for their destruction; and bee-masters should not refuse at least an equal amount of head-money. These brazen-mailed invaders take good care never to attack any but a weak hive: here they very soon make themselves at home, and walk in and out in the most cool, amusing manner possible. As an instance of the extent to which their intrusion may be carried, there was sent to the Entomological Society, in July last, a very complete wasp's nest found in the interior of a bee-hive, the lawful inhabitants of which had been put to flight by the burglars.

"But not any one of these" (we quote from the old fellow of Magdalen, from whom so many have borrowed without acknowledgement) "nor all the rest together, do half so much harm to the bees, as the bees." And here again they too truly represent human nature. As riches increase they set their hearts more upon them. The stronger the stock is, the more likely they are to turn invaders, and of course they fix upon the weakest and most resistless of their brethren as the subjects of their attack. Then comes the tug of war; and a terrible struggle it is. Here is an extract from Mr. Cotton's note book:—

"I was sitting quietly in the even of a fine day, when my sister came puffing into the room. 'Oh! Willy, make haste and come into the garden, the bees are swarming!' 'Nonsense,' I said; 'they cannot be swarming; it is August, and four o'clock in the even'. Nevertheless, I was bound, as a loving brother, to see what grounds my wise sister had for her assertion. I got up, went to the window, and although I was at least 400 yards from my bees, the air seemed full of them. I rushed out to the garden; the first sight of my hive made me think my sister was right. On looking more narrowly, I perceived that the bees were hurrying in, instead of swarming out; and on peeping about, I saw, lying on the ground, the

'defuncta corpora vita
Magnanimum heroum.'

They all had died fighting, as the play-book says, *pro hares et foxes.* My thoughts then turned to my other stock, which was about a quarter of a mile off. I ran to it as fast as I could; hardly had I arrived there, when an advanced body of the robber regiment followed me: they soon thickened; I tried every means I could think of to disperse them, but in vain. I threw dust in the air among the thickest; and read them a passage in Virgil, which makes the throwing the dust in the air equivalent to the Bees' Riot Act:

"Hi motus animorum atque hæc certamina tanta
Pulveris exigui jactu compressia quiescent."

But all in vain. We know how often this same experiment has failed, though nothing can be more true than the rest of Virgil's description of the Battle of Bees: yet dust is certainly efficacious in causing them speedily to settle when they are swarming, whether it is that the dust annoys them, or that they mistake it for hail or rain.

Mandible of the Queen Bee.
[Greatly Magnified.]

[For the "Bee Journal."]

Introducing Italian Queens.

Most methods recommended in this country for introducing Italian queens, are attended either with considerable delay, or great danger of losing the queen. In two instances, this season, I have had a queen stung in introducing her. One was killed instantly; the other, although partially paralyzed, recovered entirely on returning her to her own colony, and appears now to be as fertile as ever.

I took away a queen from a colony of half-breeds this summer, and on offering them an Italian queen, they refused to receive her. I then placed her in a cage, and suspended her in the hive for four days and nights, offering her to them every day, and they still refused to receive her, but went on making new queen cells as fast as I destroyed them. On the third evening I took from the colony all the brood and eggs I could find. The next morning, as they still refused to receive her, I examined the hive again, and found a frame containing a few eggs that I had overlooked the evening before. I removed these, and that evening they received her very quietly.

One of the best ways I have found of introducing the queen, is to make an artificial swarm in the usual way, by removing the parent stock. The bees will usually receive her in two or three hours without any difficulty.

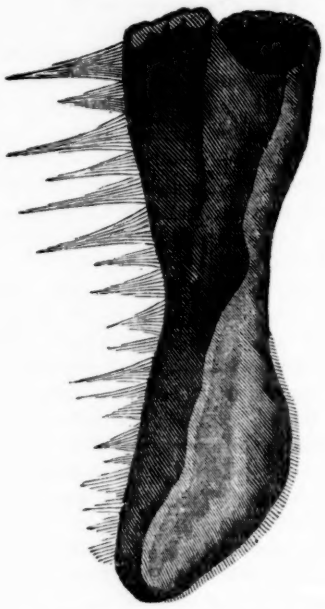
If the puff ball used in Germany, could be obtained in this country, it would, from all accounts, be a most admirable way of introducing queens and uniting stocks in the fall; but I know of nothing of the kind growing in my neighborhood, or any way of obtaining it short of importing. If any of the readers of the "*Bee Journal*" have any information in regard to it, it would be very desirable that they should communicate it to the Journal, for the benefit of beekeepers generally.*

While writing of queens, I may state one *fact* which will demolish effectually Mr. Kirby's "theory" in regard to rearing them, contained in the July number of the Bee Journal. Bees will rear a queen just as well, and in the same space of time, when there is not a drone existing within hundreds of miles of them, in the dead of winter for example, (provided they be kept sufficiently warm,) as they will in the height of the season.

I am happy to be able to inform those who have not paid much attention to the matter, that our little friends are not such disgusting little wretches as Mr. Kirby would have us believe.

Hulmesville. C. W. T.

*The *puff ball* can doubtless be found in most sections of this country, at the proper season (July and August.) In former years we have frequently seen it, of mammoth size, in York and Lancaster counties. It was obtained in the latter, near Lemon Station, on the Philadelphia Railroad, ten or eleven miles east of Lancaster, in Pequea Valley. Country lads generally know where to find it. It must be taken, and kiln-dried, before fully ripe.—*Ed.*



Mandible of the Worker Bee.
[Greatly Magnified.]

Mandible of the Drone Bee.
[Greatly Magnified.]

LIEUWENHOCK and BUFFON imagined that bees built *hexagonal* cells, because from the structure of their compound eyes, they saw all objects in that shape. How then does it happen that they give the royal cells a *cylindrical* form?

☞Please send us the names of beekeepers.

The Carpenter Bee.

An Ohio correspondent has sent us the domicile or nest of a species of *Apis* or humble bee, found there, and common, we believe, in most parts of the country.

The insect which constructed the nest referred to, is a variety of the *Apis ligniseca*, a numerous family, which Kirby says might properly be compared to *carpenters*, boring with incredible labor out of the solid wood, long cylindrical tubes, and dividing them into various cells. The account he gives of the more remarkable of these, the *Xylocopa violacea* or *Apis iricolor*, conveys a general idea of the character and habits of the entire class. This, a large species, he says, "is a native of middle and southern Europe, and is distinguished by beautiful wings of a deep violet color. It is commonly found in gardens, in the upright putrescent espaliers or vine-props, in which, and occasionally in the garden seats, doors and window-shutters, she makes her nest. In the beginning of the spring, after repeated and careful surveys, she fixes upon a piece of wood suitable for her purpose, and with her strong mandibles begins the process of boring. First proceeding obliquely downwards, she soon points her course in a direction parallel with the sides of the wood, and at length, with unwearied exertion, forms a cylindrical hole or tunnel not less than twelve or fifteen inches long and half an inch broad. Sometimes, where the diameter will admit of it, three or four of these pipes, nearly parallel with each other, are bored in the same piece. Herculean as this task, which is the labor of several days, appears, it is but a small part of what our industrious bee cheerfully undertakes. As yet she has completed but the shell of the destined habitation of her offspring; each of which, to the number of ten or twelve, will require a separate and distinct apartment. How, you will ask, is she to form these? With what materials can she construct the floors and ceilings? Why truly GOD "doth instruct her to discretion and doth teach her." In excavating her tunnel she has detached a large quantity of fibres, which lie on the ground like a heap of saw-dust. This material supplies all her wants. Having deposited an egg at the bottom of the cylinder, along with the requisite store of pollen and honey, she next, at the height of about three quarters of an inch (which is the depth of each cell,) constructs of particles of the saw-dust glued together, and also to the sides of the tunnel, what may be called an annular stage or scaffolding. When this is sufficiently hardened, its interior edge affords support for a second ring of the same materials, and thus the ceiling is gradually formed of these concentric circles, till there remains only a small orifice in its centre, which is also closed with a circular mass of agglutinated particles of saw-dust. When this partition, which serves as the ceiling of the first cell and the flooring of the second, is finished, it is about the thickness of a crown piece, and exhibits the appearance of as many concentric circles as the animal has made pauses in her labor. One cell being finished, she proceeds to construct another, which she furnishes and completes in the same manner, and so on until she has divided her whole tunnel into ten or twelve compartments.

Here, if you have followed me in this detail with the interest which I wish it to inspire, a query will suggest itself. It will strike you that such a laborious undertaking as the constructing and furnishing these cells cannot be the work of one or even of two days. Considering that every cell requires a store of honey and pollen, not to be collected but with long toil, and that a considerable interval must be spent in agglutinating the floors of each, it will be very obvious to you that the last egg in the last cell must be laid many days after the first. We are certain, therefore, that the first egg will become a grub, and consequently a perfect bee, many days before the last. What then becomes of it? you will ask. It is impossible that it should make its escape through eleven superincumbent cells without destroying the immature tenants; and it seems equally impossible that it should remain patiently in confinement below them, until they are all disclosed. This dilemma our heaven-taught architect has provided against. With forethought never enough to be admired, she has not constructed her tunnel with one opening only, but at the farther end has pierced *another* orifice, a kind of back door, through which the insects produced by the first laid eggs successively emerge into day. In fact, all the young bees, even the uppermost, go out by this road; for, by an exquisite instinct, each grub, when about to become a pupa, places itself in its cell with its head downwards, and thus is necessitated, when arrived at its last state, to pierce its cell in this direction."*

All the varieties of the *Apis* which nidificate in wood, prosecute their labor in a similar manner, though few construct habitations for their young on a scale so extensive as the one whose operations are so minutely detailed above; most of them restricting themselves to the preparation of only four or five cells for the reception of eggs.

As honey producers, none of these insects are of any account or value to man, though in other respects objects of interest to the entomologist. Dr. Dönhoff has for some years kept nests of the common humble-bee that visits the blossoms of the red clover, under cover of ordinary straw hives, in his apiary, so as to be able to observe its habits more conveniently. By marking in the summer or fall, the spot where the nests are situated in the ground, they may readily be taken up entire in the spring, removed, and placed under cover. This species produces some honey and wax; but not in sufficient quantity to justify their cultivation.

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*This may be so with the *Xylocopa violacea*, but in the case of other varieties which have come under our own observation, we suspect it is with them, as with hens, the last egg laid is the first to hatch. Certainly, we could discover no back-door or place of egress in the rear.—*Ed.*

[For the "American Bee Journal."]

A Curiosity.

MR. EDITOR:—I send you the enclosed scrap for preservation in the Journal, as I notice you have put on record already some other singular freaks of bees. This is cut from a number of the *Massachusetts Ploughman*, published in August 1842, but is not the less interesting for being old, and beekeepers will be pleased to make a note of it.

"A swarm of bees was lately found in this town, occupying a *bush* on which they had located themselves, and built their combs to the size and shape of a horse-basket. The combs were attached to the leaves, limbs, &c., of the bush, and were of all shapes to correspond with the bush to which they were attached. When found, the combs were stored with honey and well filled with young bees in every stage of perfection, presenting the appearance of a healthy and prosperous swarm.

The bush which they had chosen for their residence, was of the kind called scrub oak, and was not sheltered from wind or rain. They were transferred to a hive, and are now in the possession of the writer, apparently well pleased with their new habitation, and are doing well. The combs which they had built in their out-door residence, are preserved for the examination of the curious, it being a circumstance beyond our limited experience in the history and habits of the honey bee.

Seekonk, August 5, 1842. J. B. F."

What could have induced these bees to select so unsuitable a place for their permanent abode? Had it not been found, the entire mass must certainly have gone to destruction during the inclement weather of autumn, or the frosts and snows of winter. Does it not seem that *instinct* was at fault here?

Taunton. N. T.

☞ We do not think it at all likely that the bees *selected* the bush for their *permanent* abode. We suppose that the swarm issued from its parent hive, or some forest tree, on a sultry afternoon, and clustered in the bush in the usual manner, while the scouts were seeking suitable quarters. Before they could remove, a sudden gust of rain and wind came on and compelled them to remain. Instead of clearing off at eve, the weather, as it sometimes does, turned to a settled rainy spell of several days' continuance. The bees, being gorged with honey, commenced building combs within the cluster, attaching them to the limb or branch from which it was suspended; and depositing therein the supplies of honey brought along as an outfit. The queen likewise relieved herself by laying eggs in such empty or incipient cells as she could appropriate for the purpose. When afterwards the weather became clear and settled, their *instinctive attachment to their stores and brood* overpowered the then weaker *instinct of self-preservation*, and they continued to occupy their exposed and precarious position. There *may* have been a clashing of *instinctive impulses*, but they were governed by their then predominant feeling—unwisely, we may admit, if they can be supposed to have been gifted with a sufficient degree of *prescience* to *foresee* the remote, though inevitable result. We suspect, however, that there was no *deliberation* in the case, nor any exercise of *judgment* properly so called. Under the circumstances, they simply acted in accordance with their impulses and attachments.

[For the "Bee Journal."]

Battle among Bees.

As another curious occurrence, which I presume will be interesting to most beekeepers, as exhibiting a singular trait in the character or at least the conduct of the bee, I send you the following article, taken from the *Toledo Republican* of June 13, 1855:

"A gentleman living near Adrian, relates a singular circumstance which occurred on his farm. A few days ago, a new swarm came out of their maternal hive and gathered around their young queen, in the warm sunlit atmosphere. But instead of going to some neighboring tree or shrub, and forming a hanging cluster, as has invariably been the rule with all predecessors with whom we have been acquainted, they settled on a neighboring hive, and began a murderous attack upon the peaceable inmates.

The unsuspecting workers were taken by surprise, and many of them were killed by the invaders, before they became fully aroused, when the conflict became quite obstinate. The fact that most of the working bees of the hive were out gathering honey, gave the new swarm all the advantage; and though the battle lasted all day, they finally triumphed. Thousands of dead bodies were dragged to the entrance, and thrown on the ground each hour."

The relator does not state whether this was a *first* or a *second* swarm, and there is consequently a doubt whether its queen was a *young* one, though he calls her so.

Ridgeville. J. McG.

Meteorological.

We announce nothing new when we say that the state of the weather is of incalculable importance in bee culture. Hail storms, violent winds, and long-continued cold or rain, have often destroyed the fairest hopes of the beekeeper; and warm, dry, calm weather, with occasional showers, has always been regarded as peculiarly propitious to the labors of the bee. But the alleged peculiar effects on vegetation of what is called *sheet-lightning*, are less noticed or known. Mr. Kritz says of it, in the Bienenzeitung:—"Whether all kinds of honey-yielding plants are similarly affected by this kind of lightning, I am not aware, but from the concurrent testimony of observers, it exerts a singularly detrimental influence on the blossom of buckwheat. Beekeepers in Germany, who rely mainly on buckwheat pasturage for fall supplies for their bees, dread nothing so much as the occurrence of sheet-lightning while this plant is in blossom. They assert that it vitiates the juices of the plant and prevents the secretion of nectar in the blossoms, rendering the latter thenceforward useless for the bees. That these effects are really attributable to this cause, and flow from it, I have not only been assured by many intelligent observers and practical beekeepers, but once had an opportunity myself to ascertain the fact, while residing in a buckwheat district. It happened that on a sultry night, during which sheet-lightning, unaccompanied by thunder, prevailed almost incessantly, followed a warm day when the bees had gathered honey in great abundance from a large buckwheat field then in blossom. No rain fell, and the next day was warm and beautifully clear; but not a bee visited the buckwheat field, their supplies having been cut off at a blow, as it were. This effect of sheet-lightning appears to be most marked, if an easterly current of air prevails at the time; and the phenomenon certainly deserves to be investigated by meteorologists. The result, moreover, is alleged to be an almost total destruction of the crop."

Dr. Jähne, of Herrnhut, says that this deleterious effect of sheet-lightning has frequently been mentioned to him by beekeepers in northeastern Lusatia, where buckwheat is extensively cultivated; and several years ago he observed that, after the occurrence of such lightning during the night of the 27th of August, the bees ceased to frequent a buckwheat field in his neighborhood, though it continued to blossom for some weeks apparently with as much luxuriance as before.

☞ *Please send us the names of beekeepers.*

Swarming Time.

In England, according to Wildman, bees swarm in May and June, and occasionally not till July. The time in France, M. La Gienees says, is from the 15th of May to the 15th of June, in favorable seasons; and in late springs, from the middle of June to the middle of July; in Italy, according to Contardi, at the end of April and the beginning of May; and in Sicily as early as the middle of March.

In the Greek Archipelago two swarming periods occur, one in the spring, and the other in the summer. The former corresponds with the blossoming of the sage plant, and the latter with that of the thyme; and the size of the swarms depends on the amount of honey yielded by these plants in their season.

In Switzerland, bees can seldom begin to gather pollen before the first of March, and swarming takes place in May and June, as the spring is more or less forward. Swarms coming there after the first of July, are rarely worth hiving as independent colonies, as they have neither time nor opportunity to gather sufficient stores for the winter.

The approach of swarming time is always indicated by the appearance of drones, though that is no sure evidence that swarming will follow; as the weather may subsequently prove unpropitious. Drones usually issue about six weeks after the bees of the colony begin to gather pollen; and they precede swarming (where it does take place) from one to three weeks.

In southern countries swarms are generally much larger than in northern. Della Rocca states that on the Greek Island of Syra, they not unfrequently weigh ten or twelve pounds. In the central portions of France, their average weight is about four pounds. When swarming, bees carry with them an outfit of honey in the proportion of one to four of the weight of the swarm—or, rather, of a swarm of fifteen pounds the bees weigh twelve pounds, and the honey appropriated by them weighs three. Bees gorged with honey weigh about five thousand to the pound.

It is customary in the Island of Syra, after a swarm has issued, to feed the parent stock on the following evening, half a pound of honey diluted with some wine or brandy. This is supposed to stimulate the industry of the bees and promote the fertility of the young queen after fecundation. Della Rocca says that one of his stocks thus fed on each occasion, yielded three swarms, and was fully as populous on the first of August as it had been when the first swarm issued. In the following year also, it produced a strong swarm earlier than any of his stocks which had not been so fed.

[For the "Bee Journal."]

I do not see how any one who has two hives of bees, and calls himself a beekeeper, can do without the "Bee Journal," if he can obtain it. He must be a loser by his self-denial. I have not seen a number of it yet not worth a year's subscription to one who keeps bees. I began beekeeping seven years ago with four hives bought at a vendue, and after all sorts of experiences had four hives still last spring. Some years the bees swarmed and the swarms decamped and were lost. Other years when they were safely hived, the worms killed most of the old stocks, and in the end, I had no more than at the beginning. I fared somewhat like the Irishman who lengthened his blanket by cutting off a strip at the bottom, and sewing it to the top, and then found it just as long as it was short. I counted on better luck when I began, and though quite patient, the luck did'nt come, while disappointment was a regular visitor. Early last spring I got hold of the Bee Journal by the kindness of a friend, and that changed my notions about things a good deal. My bees are in common straw hives, and I wished them out. But as no movable comb hives could be got hereaway, I had to make up my mind to do as well as I could. I resolved to try "Kritz's method," as my bees seemed to be about right for that, and the plan pleased me. Well, I tried, and succeeded. I can now report eight stocks in my garden, all as busy as bees ought to be, and promising to do well. I never had more than six before at the top of the season, with a right smart chance of worms in two or three, which always turned up forsaken by all save the millers, long before I had occasion to bother my head about "successful wintering." Now the wind sits in another quarter. I have fine thriving young colonies, and the old ones are so crowded with bees, and so full of life and bustle, that I guess the worms must look for other quarries this year. The bees seem to think that they have got a new lease of life and work with a will. The best of it is they have put new life into me, and revived my fondness for a business I was fast getting out of conceit of. All this comes from the Bee Journal. I feel as if I had lost seven years from not knowing what it has taught me. I was told when I began, that the sure way was to let the bees follow their own instincts. I did so, (sometimes unwillingly, when they swarmed,) and at last had no more than I started with. I might have known better, for if I should let my pigs always follow their own instincts, my friends would hardly ever praise my home-cured hams, or if they did it would be by way of a cool joke. In truth, I was long satisfied that the thing was wrong from tail to snout, but what else to do was the puzzle. The Bee Journal first opened my eyes, and showed me what I have found is a better way. Next year I mean to try movable comb hives if I can get any, and steer on the new tack. I send this through Mr. K———, of S———, to whom send the Journal as before, till it can come to a northern Southerner by mail. The numbers I have, have been worth more to me than four years' subscription. *Go ahead!*

Pine Bluff, Ark. J. M. U.

☞Another correspondent says, in a postscript: "I have tried "Kritz's method modified, according to the Bee Journal for May, and am delighted with it so far. I also resorted to seasonable *driving* with several other stocks, and succeeded beyond expectation. It saved me much time, trouble and anxiety. I am paid in advance for a dozen years' subscription."

[For the "Bee Journal."]

CULTURE OF MUSTARD.

Among the crops cultivated to provide pasturage for bees, hardly any is so profitable in itself as the common black mustard—yielding an abundance of seed, when ripe, and supplying the bees with a rich flow of nectar, while in blossom, and plenty of pollen. It produces a long-continued succession of flowers, the earliest opening while the plants are still small, and others follow as the stalk enlarges and throws out its branches. It comes into bloom just at the season when bees ordinarily find little to gather—after they have luxuriated on the white clover, and before the fall flowers open.

The seed should be sown about the time of putting in other spring crops, and requires a rich, clean, moist soil. Four quarts are sufficient for an acre sown broadcast, though less will answer if drilled in, as it sometimes is. It ripens unequally, and should be cut rather green, to prevent waste by shelling out. Where only a small patch is sown, it is best to do the threshing on canvas, on the ground where it grew, as much seed will be lost in hauling to the barn, unless a dewy morning or damp weather can be selected. It yields from ten to twenty bushels per acre, and sells readily at from $2.50 to $3 per bushel.

Large quantities of mustard seed are annually imported from Holland and the southern parts of Europe, to be manufactured in this country; and there is, frequently, a deficient supply. Pittsburgh and Albany are good markets for it, and, no doubt it would sell readily in any of the seaboard cities. Great care must be taken in the process of cleaning, to get it into good merchantable order. This can be effectually done by means of an improved wheat fan or winnowing machine.

The product of seed and honey would, together, make this one of the best paying crops.

Jacob Bolmar.

Account of the Bee-Eater.

BY THE REV. GILBERT WHITE,
Of Selborne, Hampshire, (Eng.)

We had in this village, more than twenty years ago, an idiot boy, whom I well remember, who, from a child, showed a strong propensity to bees; they were his food, his amusement, his sole object; and as people of this cast have seldom more than one point in view, so this lad exerted all his few faculties on this one pursuit. In the winter he dozed away his time, within his father's house, by the fireside, in a kind of torpid state, seldom departing from the chimney corner; but in the summer he was all alert, and in quest of his game in the fields and on sunny banks. Honey-bees, humble-bees, and wasps, were his prey, whenever he found them. He had no apprehensions from their stings, but would seize them *nudis manibus*, and at once disarm them of their weapons, and suck their bodies for their honey-bags. Sometimes he would fill his bosom between his shirt and his skin, with a number of these captives; and sometimes would confine them in bottles. He was a very *merops apiaster* or *bee-bird*, and very injurious to men that kept bees; for he would slide into their bee-gardens, and, sitting down before the stools, he would rap with his finger on the hives, and so take the bees as they came out. He has been known to overturn hives for the sake of honey, of which he was passionately fond. Where metheglin was making, he would linger around the tubs and vessels, begging a draught of what he called *bee-wine*. As he ran about, he used to make a humming noise with his lips, resembling the buzzing of bees.—This lad was lean and sallow, and of a cadaverous complexion; and, except in his favorite pursuit, in which he was wonderfully adroit, he discovered no manner of understanding. Had his capacity been better, and directed to the same object, he had perhaps abated much of our wonder at the feats of a more modern exhibitor of bees; and we may justly say of him now,

"Thou,
Had thy presiding star propitious shone,
Should'st *Wildman* be."

When a tall youth, he was removed from hence to a distant village, where he died, as I understand, before he arrived at manhood.—*Natural History of Selborne.*

☞Hives lined with straw-matting are no new invention. They have been in use many years in Germany, Hungary, and other parts of Europe.

AMERICAN BEE JOURNAL.

Philadelphia, August, 1861.

☞We have received the first eight numbers of the fifth volume of "*L'Apiculteur*," the French Bee Journal, published in Paris, by Mr. H. Hamet, Professor of Bee Culture at Luxembourg. Unhappily we are not sufficiently familiar with the French language to peruse, with readiness and ease, the articles which the Journal contains; but patience and perseverance, and a general knowledge of the topics, have enabled us to perceive that the Journal is well edited, and creditably aided by its correspondents. It is handsomely got up, and published at six francs per annum. We hope, with the assistance of friends, to have it in our power to avail ourselves occasionally of its contents.

AGENTS.

Our friends everywhere are requested to act as Agents for our publications. The following gentlemen will receive subscriptions to the "*American Bee Journal*," or the "*Farmer and Gardener*."

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Monthly Management.

AUGUST.

With this month, in most sections, the honey season closes. The bees continue to expel the drones, and during this period the colonies should be carefully supervised. Those which retain their drones longer than their neighbors, should be marked as suspicious, and an early occasion taken to examine them, to ascertain their condition, so that if found queenless, the proper means may be seasonably used to provide a remedy, by supplying them with a reserve queen, or uniting them with some weak stock known to be sound. Care must also be taken to prevent robbing; to which bees are much prone at this time. The removal of surplus honey, or giving additional supplies to such as have insufficient stores for the winter, should be undertaken only early in the morning or late in the evening, or on some cool day; and should be performed with all possible expedition. Honey-combs must not be placed in exposed situations, nor should the brooding chamber of movable comb-hives be uncovered for prolonged operations during the hours when bees are flying briskly. If colonies require to be fed, it should be done only at night, and the feeding boxes should be removed early in the morning, to avoid attracting bees by the odor of honey. The entrances of the hives should likewise be contracted, to enable the bees the more effectually to defend themselves and their stores in case of attack. All cracks and crevices in old box or basket hives, through which a bee might creep, must be closed with soft clay or putty. The greater the number of hives in an apiary, and the more deficient the pasturage, the more diligent must the beekeeper be to guard against robbing.

But, in districts where buckwheat is cultivated, the bees have usually renewed and abundant pasturage during a part of this month, of which they avail themselves with great eagerness. Where the supply of nectar is ample, and the weather favorable for gathering, it is well to remove the greater portion of the sealed honey, to afford the bees room for storing; and if they can, at the same time, be furnished with empty combs in good condition, they will be greatly aided in their work. Movable comb hives enable the beekeeper to perform this operation with great facility; and if the empty comb be inserted between two full ones, the re-filling will proceed still more rapidly. Where buckwheat pasturage can be confidently expected, an increased amount of honey will be secured, if the queens be confined or removed about three weeks in advance, so as to check the production of brood and consumption of honey, and also providing an increased number of empty cells. But this process must be cautiously availed of in colonies intended to be wintered, because if the queens are kept in confinement too long, the hives will contain an inadequate number of young and vigorous bees in the fall. On the other hand, it may be freely used, and with great advantage, in colonies intended to be broken up or united with others.

[For the "Bee Journal."]

Virgil and the Constellations.

Will some practical beekeeper, who has a competent knowledge of Latin and astronomy, oblige by furnishing a translation and *explanation* of the following passage in Virgil's Fourth Georgic?

> "Taygete simul os terris ostendit honestum
> Pleias, et oceani spretos pede repulit amnes:
> Aut eadem, sidus fugiens ubi Piscis aquosi,
> Tristior hibernas cœlo descendit in undas."

If by this it is meant to indicate the two seasons at which bees were deprived of their surplus honey in Virgil's time, how is the precise period, in each case, to be deduced from the astronomical data? *Pisces*, I think, always set before the Pleiads; how then can the latter be said to be, at any time, *flying* from the former?

I never had an opportunity to acquire more than a smattering of Latin, and would not undertake to construe the passage so as to make satisfactory sense of it; for it has been a puzzle to me ever since my fondness for bees induced me to venture on a re-perusal of Virgil's delightful production, conning my way through the original with plodding perseverance. Most teachers of Latin have only a general and superficial knowledge of astronomy, and none at all of bee culture. Those whom I have consulted, on various occasions, after turning each Latin word in the passage into English, appeared to think that they had done all that ought to be required of them—wholly unaware, seemingly, of the real difficulty in the case; or consigning it to the astronomers, as pertaining properly to the province of the star-gazing brotherhood.

I would ask, is the text, as we have it, corrupt? Or did Virgil, in this instance, write nonsense? Or is there any way of reconciling the poet's account of the stellar appearances with the presumed and probable time of the *mellatio verna* and *mellatio æstiva*, more especially the latter?

There are no doubt some apiarians who are also masters of Latin and astronomy; and to those I would appeal for an elucidation of the passage, such as the pedagogues seem unable to furnish, and as would keep unimpeached the poetical accuracy of the Mantuan bard—whose praise is in every apiary.

COLUMELLA.